

Unit Planning Guide: Unit 6 of 8

Unit Title: Circles	Pacing (Duration of Unit): 20 days
Grade: Geometry	Buffer Day(s): 5 days

Desired Results

Transfer Goals

Students will be able to independently use their learning to:

- Make sense of problems and persevere in solving them.
- Reason abstractly and quantitatively.
- **Construct viable arguments and critique the reasoning of others.**
- Model with mathematics.
- **Use appropriate tools strategically.**
- Attend to precision.
- **Look for and make use of structure.**
- Look for and express regularity in repeated reasoning.

Established Goals (2011 MA Curriculum Frameworks Standards Incorporating the Common Core State Standards)

Pre-Requisite Standards:

- **7.G.4-** Know the formulas for the area and circumference of a circle and solve problems; given informal derivation of the relationship between the circumference and area of a circle.

Standards (Priority Standards in bold):

- **G-C. 1** Prove that all circles are similar.
- **G-C.2** Identify and describe relationships among inscribed angles, radii, and chords. *Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.*
- **G-C.5** Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.
- **G-GPE.1** Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.
- G-CO.1 Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.
- G-C. 3 Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.
 - MA.3a. Derive the formula for the relationship between the number of sides and sums of the interior and sums of the exterior angles of polygons and apply to the solutions of mathematical and contextual problems.
- G-C.4 (+) Construct a tangent line from a point outside a given circle to the circle.

(+) indicates standard beyond College and Career Ready

WIDA for English Language Learners

Standard 1: ELLs **communicate** for **Social** and **Instructional** purposes within the school setting
Standard 3: ELLs **communicate** information, ideas and concepts necessary for academic success in the content area of **Mathematics**

In the lesson planning stage, teachers will need to differentiate lessons for ELLs. In order to accomplish this they will need: 1.) this curriculum map, 2.) a list of their ELLs and their proficiency levels, and 3.) appropriate language function expectations and scaffolds or supports.

Meaning (*Mostly assessed through Performance Tasks/Assessments)

Big Ideas:

- Many relationships exist between a circle and lines, segments, and angles.
- The study of circles involves many aspects of geometry including lines, segments, arcs, and angles.

Essential Questions:

- How can geometric ideas using circles be communicated using a variety of representations? (i.e. maps, grids, charts)

Acquisition (*Mostly assessed through traditional summative assessments)

Knowledge:

Students will know ...

- that all circles are similar.
- definitions of the parts of a circle (**radius, diameter, circumference, arc, chord, sector, tangent line**).
- definitions of **circumscribed, inscribed, and central** angles and polygons.
- that the length of the arc intercepted by an angle is proportional to the radius.
- the equation of a circle.

Bolded words are key academic vocabulary

Skills:

Students will be skilled at:

- proving that all circles are similar. (*Evaluation*)
- identifying and describing relationships among inscribed angles, radii, and chords. (*Knowledge*)
- defining the radian measure of the angle as the constant of proportionality. (*Comprehension*)
- deriving the equation of a circle using the Pythagorean Theorem. (*Synthesis*)
- constructing the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle. (*Application*)
- (+) constructing a tangent line from a point outside the given circle to the circle. (*Application*)

(+) indicates standard beyond College and Career Ready

McDougal Littell
2007

Chapter 10
10.1 (+)
10.2
10.3
10.4
10.5 (+)
10.6
10.7